XA-PA4

PC Software for XA-A Series Controllers

User's Manual

Rev 2.40

XA-PA4 License Agreement

Thank you for choosing ***XA-PA4***.

The following agreement must be agreed to use Software program, XA-PA4, developed by SUS Corporation (hereinafter referred to as SUS). Unless the agreement was made, the XA-PA4 must be uninstalled from User's PC.

1. This License Agreement is effective immediately after users started to use XA-PA4.
2. All copyrights for ***XA-PA4*** are reserved by SUS.
3. XA-PA4, which is developed by SUS, may be used only for purposes of licensee's business. Only authorized users may be allowed to use.
4. Unless prior agreements were made in written documents created by SUS, ***XA-PA4*** and any associated documents shall not be duplicated, modified or quoted to others.
5. Licensees acknowledge that SUS shall be not liable for any results caused by use of ***XA-PA4*** by users. (Reference to ***XA-PA4*** Waiver Clause) Licensees acknowledge that Licensees shall waive indemnifications for any damages arising out of the use of ***XA-PA4*** by users.
6. SUS may terminate this Agreement in the event where the Licensee is in default of any of the terms and conditions of this Agreement and/ or made any serious incidents to discontinue this Agreement.
7. SUS may change any specifications of ***XA-PA4*** without a prior notice. SUS will not provide any warranty for ***XA-PA4***.

XA-PA4 Waier Clause

●Due to the use of ***XA-PA4***, Licensees acknowledge that SUS shall not be liable for any troubles or damages to Licensees' properties including, but not limited to, Licensees' PC, peripheral equipment and/ or data.

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Introduction

XA-PA4 is PC software to support **XA-A series controllers** by SUS Corp.

Data such as position data, program data, parameter data, etc. can be edited simply and effectively. Also, the edited data can be saved in a file and/ or printed out.

With this software, we hope that you feel comfortable to use **XA-A series controllers**.

Instructions and Directions for Use of XA-PA4

- Make sure to turn OFF the power of ***XA-Ax*** when communication cables are connected and disconnected.

  (When USB-RS232C conversion cables are used, do NOT disconnect the communication cables and/ or USB-RS232C conversion cables during this PC software running.)

- Use a communication cable specified by SUS (PC232-8-CAB) when ***XA-PA4*** communicates data with User's PC.

- Do NOT turn OFF the power of ***XA-Ax*** while the XA-PA4 is communicating data with User's PC. Connect the communication cables firmly to avoid disconnection of cables during the data communication.

- When USB memories are used for the data storages, **do NOT eject them while this software is running**.

- **At JOG teaching for position data, the communication may stop if buttons for Forward and Backwards were repeatedly and quickly clicked. Avoid such usage of the buttons.**

XA-PA4 Outline

The following is the brief descriptions of functions supported by ***XA-PA4***.

◆ Data Editing

The following data can be edited:
(1) Position Data
(2) Program Data
(3) Parameters

Edited data can be saved in a file and/ or printed out. Data communication allows to read, write and verify the edited data.

◆ Monitoring/ Program Execution and Abort

It allows monitorring input/ output, and current values and program status.
Output can be forced to toggle.
In addition, it allows monitoring flags, variables, and position varaiables.
It allows selecting a certain program and executing/ stopping it.

◆ XA Motion Test

● Selective Move
Certain target position Nos. can be selected up to maximum 15 positions and any motion order can be set as you prefer.
Timer (100 msec increment) can be set for the next motion.

● Continuous Move
It allows moving to one position No. or continuous multiple position Nos.
Timer (100 msec increment) can be set for the next motion.

◆ Teaching

It allows teaching a target position for ***XA***. The target position can be taught in a jog through communication or MDI.
A position No. can be selected on the same screen. After that, the position can be verified by moving ***XA*** to the position No.

XA-PA4 Operation Environment

In order to operate ***XA-PA4***, the following environment is required.

◆ Supporting OS and PC Models

OS and PC Models that support this software are as follows:

Windows 2000
Windows XP (32Bit)
Windows Vista (32Bit)
Windows 7 (32Bit)
Windows 8 (32Bit)

in IBM PC and PC/AT compatible PC (DOS/V)

※ Regardless of the above OS, this software may not perform correctly depending on the type of PC.
※ Note that this software may not perform correctly in 64Bit OS.

◆ CPU & Memory

Pentium 200MHz (or equivalent products) or better is recommended.
Extended memory, 512 MB, or more is recommended.

◆ HDD Available Space

Available space 10 MB or more is required.

◆ Display

Resolution 1024 x 768 or better
256 colors or more

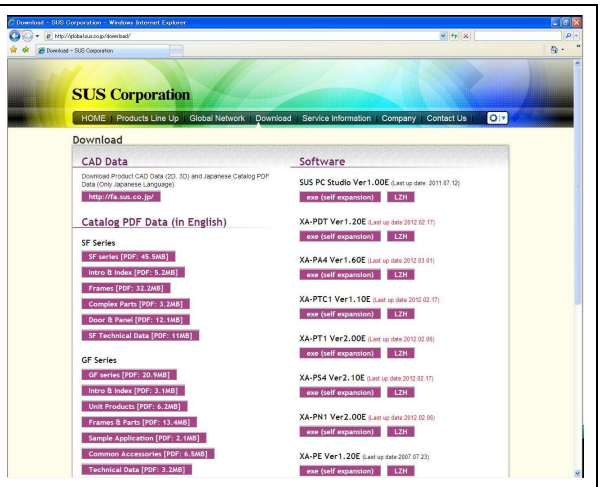
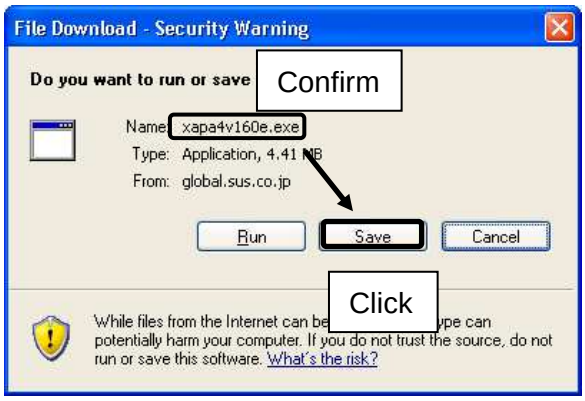
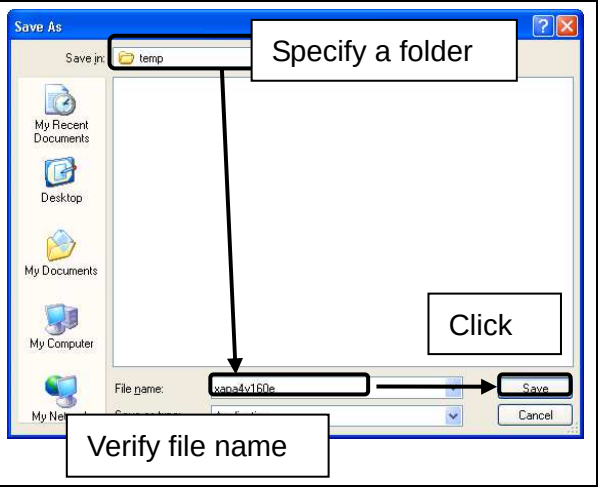
◆ Serial Port (RS-232C)

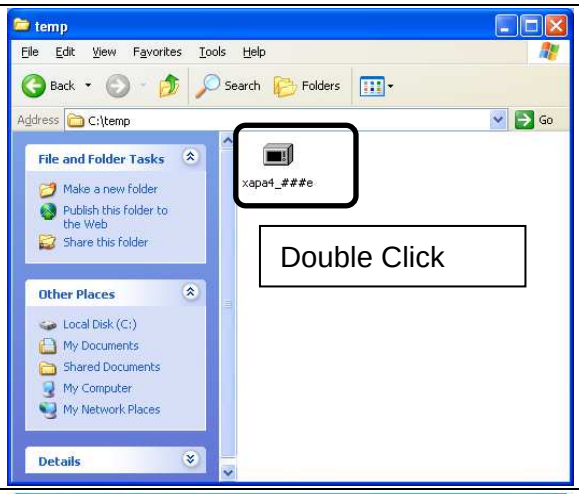
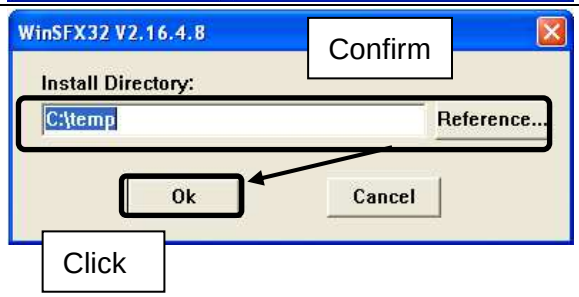
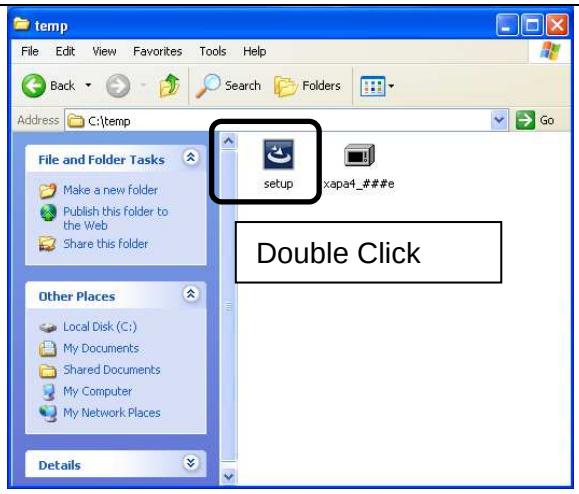
One of RS-232C serial ports, COM 1 through 16, is required to be available.

※ When RS-232C serial ports are not available, the communication can be made through USB port by using USB-RS232C converter.

XA-PA4 Installation

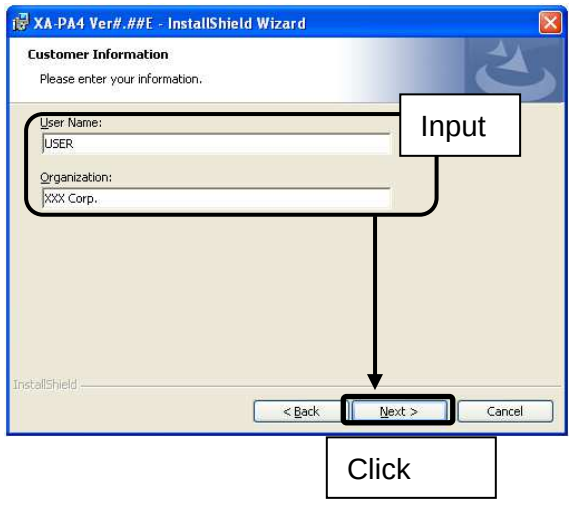
XA-PA4 requires to be installed in HDD of PC. This section instructs how to install ***XA-PA4***.

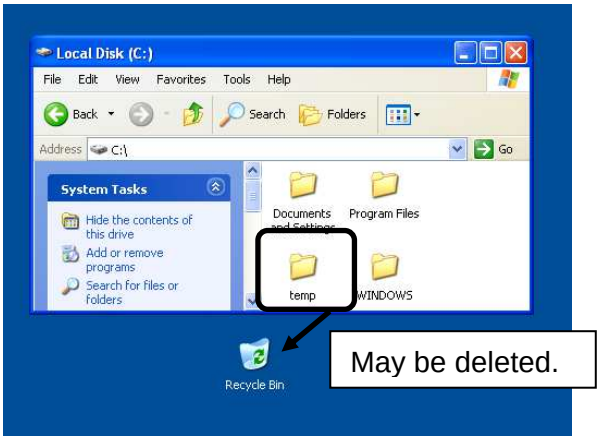
1	Download (or save) the setup program for ***XA-PA4*** in your PC. Two types of files are available to download. (http://global.sus.co.jp/download). The file names are as follows: **XA-PA4_###.exe** **XA-PA4_###_nf.exe (Bundled Software with NetFramework4.0)** Both files are self-extracting ones. If NetFramework4.0 is not installed on your PC, connect to the Internet and install the bundled software. ※ ### represents the number of the software version.	
2	Click on a link for the self-extracting file "XA-PA4_###.exe" to download. Select an option "Save this program to HDD" and click OK.	
3	Create a new folder, if necessary. Specify the appropriate folder to download the file. Here, a new folder called "temp" was created as an example and specified as a location to save the file. Then, click "Save" to save the file.	

4	Look for the downloaded file in “MyComputer” or “Explore” and double click on it.	
5	After double clicking on it, specify an appropriate folder to extract it. As an example, the file is extracted in the “temp” folder where the downloaded file was saved.	
6	Double click on “XAPA4vXXX_setup.exe” in the extracted files and start installing.	

※ If the system files and shared files are accessed by other applications during the installation, the installation may be unsuccessful. Close all other applications prior to the installation.

※ When an older version of ***XA-PA4*** was installed in PC, the newer version cannot be installed in the same PC. The older version of XA-PA4 is to be uninstalled. Refer to “Uninstallation” in page 11.

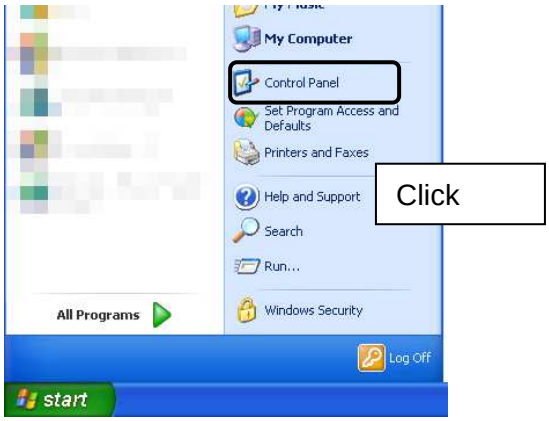
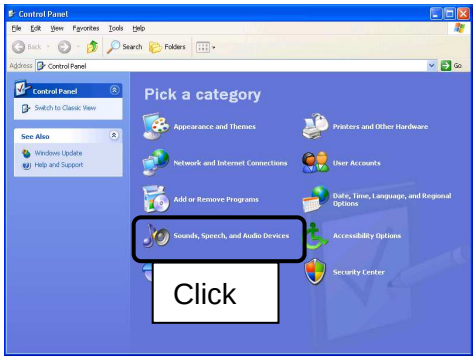
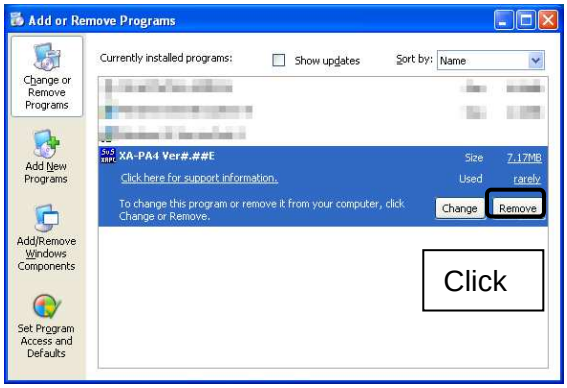
7	Once the setup screen came up, clickon “Next”.	
8	Read and agree on the License Agreement of ***XA-PA4***. Then, click OK. ※ If not agreed, the installation will be terminated.	
9	Type in user name and company. Then, click “Next”.	

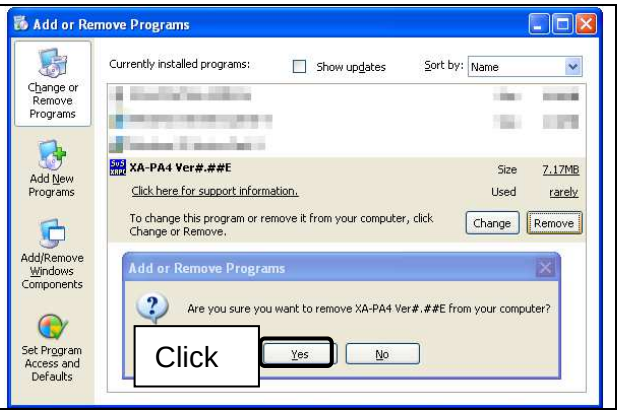
10	The software program will be installed under “Program Files” as a default. A new folder “XA-PA4V###E” will be automatically created and the software will be installed there. If the installation location is correct, click “Next”. If a folder is to be changed, click “Change Folder” and specify a folder to install. ※ ### represents the version number.	
11	If the information such as the installation location, user name, and company name is correct,	
12	Click “Finish”.	
13	After the installation, the folder and files for downloading such as “temp” folder, ”XA-PA4_###E.exe”, and “Setup.exe” may be deleted.	

Uninstallation

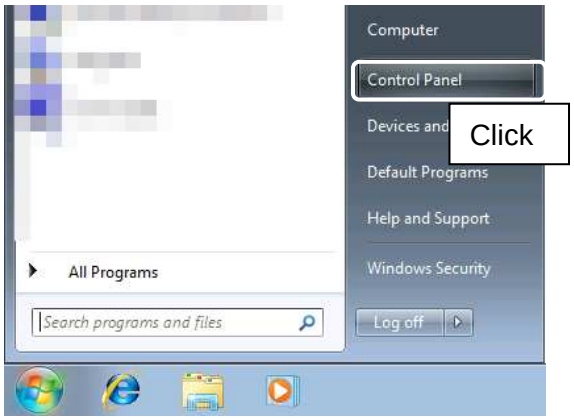
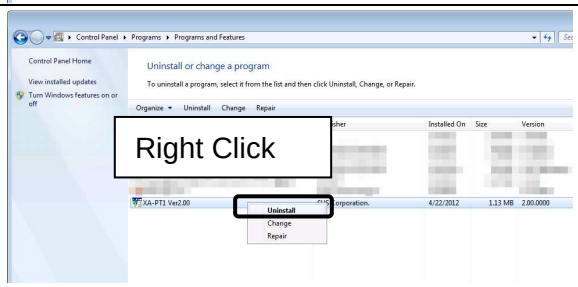
Uninstallation means to delete all files associated with the software from HDD in PC. Here describes how to uninstall ***XA-PA4*** from HDD in PC.

Windows 2000、Windows XP

1	Go to **[Start]–[Control Panel]** from Start menu**.** Open Control Panel.	
2	Double click on **“Add and Remeve Programs”.**	
3	Select “**XA-PA4 Ver ###**” from **“Add and Remeve Programs”.** Click **“Remove”.**	

4	Before removing ***XA-PA4***, a validation window will display “Do you want to remove XA-PA4 Ver#.## from your computer?” Click “Yes” to remove.	

Windows Vista , Windows 7

1	Go to **[Start]–[Control Panel]** from Start menu. Open Control Panel.	
2	Double click on **“Uninstall Programs”.**	
3	Select **“XA-PA4”** in “Programs and Functions” and right click on “Uninstall”. **“User Account Control”** window will be displayed. Click “Yes”.	

Communication Cable Connection

PC Side

・Connect Dsub9 pin connectors of communication cables (PC232-8-CAB) to serial ports (COM1 to 16).

・Use conversion connectors if the serial ports are not Dsub9. (The conversion connectors are provided by others.)

・Use USB-232C conversion cables (USB-RS232C) if any serial ports are not available in your PC.

<NOTE> If USB-232C conversion cables were relocated, the serial port number will be changed accordingly. Once the cables were relocated, update the serial port numbers in the PC software each time.
For more details, see **"Communication Port Setup"**.

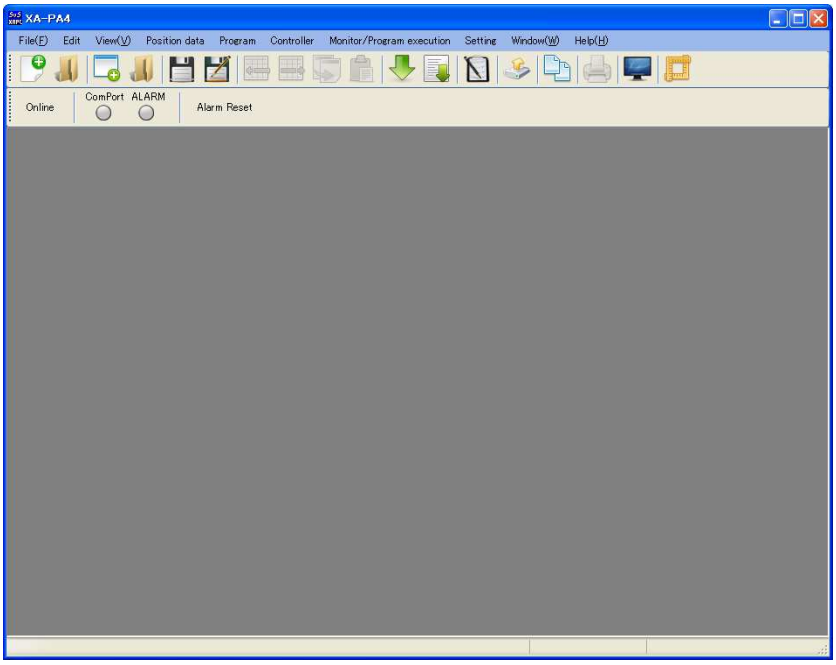
Controller Side

Connect MiniDin side of the communication cable (PC232-8-CAB) to the controller. Hold the controller and connect the cable gently.

Start *XA-PA4*

After the installation is completed, a shortcut icon for XA-PA4 will be created in Start menu. Click on the shortcut icon to open the software. Unless the default location is changed, the icon will be registered in the following location.

[Start]–[Program]–[XA-PA4 V###] ※ ### represents the version number.

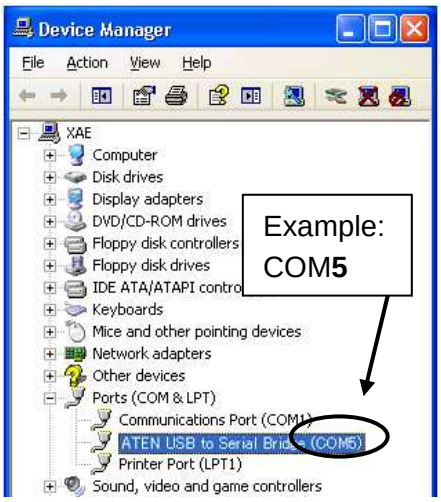


Communication Port Configuration

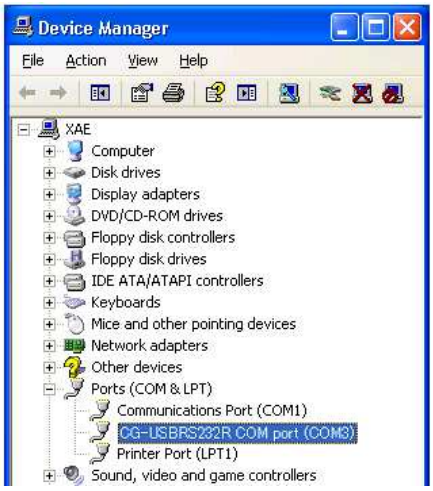
In order to successfully communicate data between PC and XA-A Series Controllers, COM numbers assigned by OS should match with communication port numbers in PC software.
First, verify what number of COM the communication port is assigned in Windows.

Windows Setting Comfirmation
[Start]-[Settings]-[Control Panel]-[System]-[Device Manager]
It allows comfirming the COM number in the Device Manager.

For a device from Sanwa Supply,
"ATEN USB to Serial Bridege (COM *)

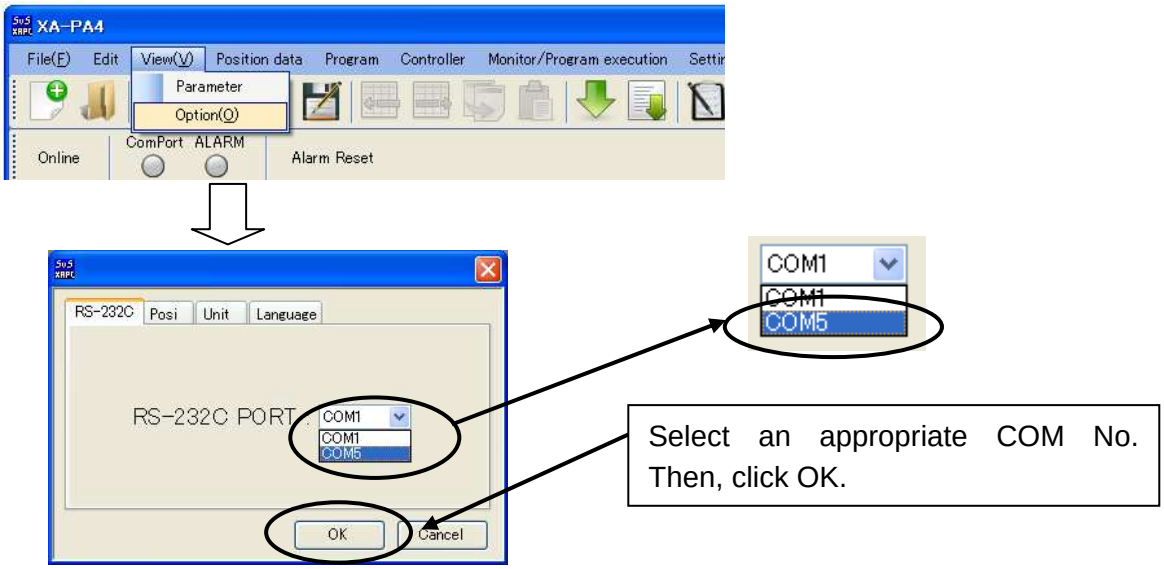


For a device from Corega,
"CG USBRS232R COM Port (COM *)



Then, comfirm XA-PA4 Communication Port.

XA-PA4 Communication Port Setting
On Menu Bar, [View] -[Option]
Select the same COM No. as the XA-PA4 communication port No. in the Device Manager. Here, COM 5 for a device from Sanwa Supply is displayed as the example.



Communication port settings will be saved in PC, once it is set. This setting will be no longer required after that, unless the USB-232C conversion cable is plugged in another slot. If the USB connector was plugged in another slot, check and/ or update the serial port No. settings in your PC each time.

XA-PA4 Display

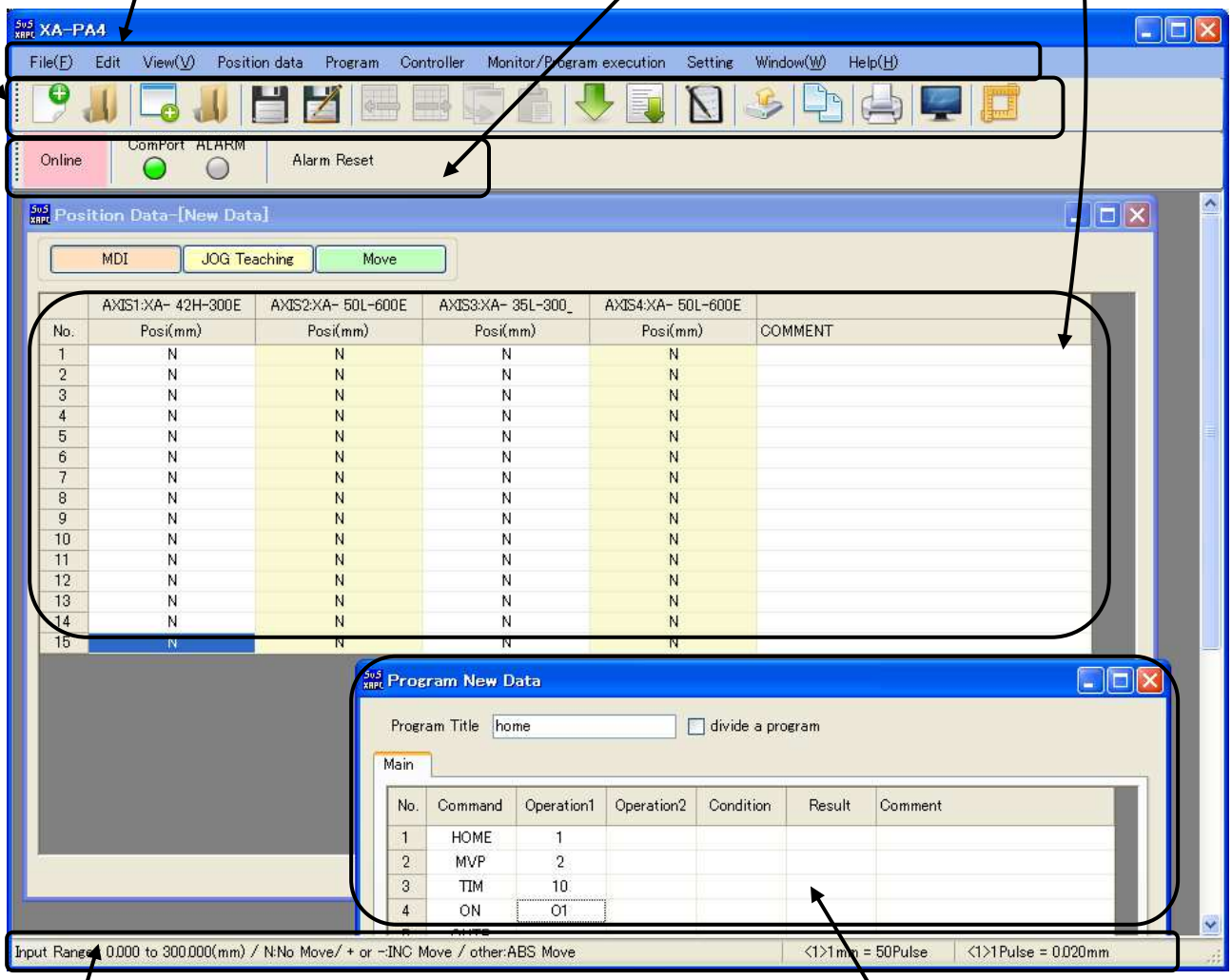
●This is brief explanations for each portion of the window.

(2) Toolbar
Buttons to execute commands. Frequently used buttons are displayed. The buttons allow executing each command by clicking once. (See page 26 – 27)

(5) Edit for Position Data
Edit position data by inputting values or jog teaching. (See page 30 -.)

(3) Status & Reset Button
RS-232C serial port status, communication progress, and alarm status for the controller are displayed. (See page 28.)

(1) Menu
Menu to execute each command is displayed. (See page 16 – 25.)



(4) Status Bar
The information for the controller version, position data input rage, and each actuator is displayed. (See page 29.)

(6) Edit for Program Data
Program data (see page 39.) is edited.

Menu

Comments on Each Menu

【File】

[New - Position Data] [File]-[New]-[Position Data]

This is for creating new position data. Specify the start position number and end position number. The specified data range will be displayed.
The data can be inserted or deleted from the end.
If the position data has changes before creating new one, the validation will be displayed whether the data is to be saved.
If the data is to be saved, click “Yes”. If not, click “No”.

[New - Program Data] [File]-[New]-[Program Data]

This is for creating new program data.
Specify new program No. in a program No. selection window.
Depending on the specified program No., the required number of steps to create the program may vary. (No.1 - No.15: 500 steps、No.16 – 50: 100 steps)

[Open - Position Data] [File]-[Open]-[Position]

Position data saved in a file will be loaded and displayed.
Specify the name of the position data file (*.xad).
The data within a range saved in the file will be displayed.

[Open - Program Data] [File]-[Open]-[Program Data]

Program data saved in a file will be loaded and displayed.
Specify the name of the program data (*.prg).
The program data saved in the file will be displayed in the new program screen.

[Close] [File]－[Close]

A currently active screen will be closed.

[Save] [File]-[Save]

Data in either the active position data screen or the program screen will be saved.
If no file name is specified (i.e. when the title of the position data is displayed as [New]), save as a new file name.

[Tip]
- [Save] icon on a toolbar performes the same.

[Save as] [File]-[Save as]

Data in either the active position data screen or the program screen will be saved as a specified name.
For position data, specify the start position No. and the end position No. to be saved.

[Tip]
The extension of position data files is ".xad".
If the file name is specified as "data1", the file is saved as "data1.xad".
The extension of program data files is ".prg".
If the file name is specified as "prog1", the file is saved as "prog1.prg".

[Printer Settings] [File]-[Printer Settings]

It allows setting printers. Select a printer as preferred.

[Print] [File]-[Print]

Data in either the active position data screen or program screen will be printed.
Specify the start position No. and the end position No. to be printed.

[Tip]
Print the data saved in a file AFTER loading in this PC software.

[Close] [File]-[Close]

XA-PA4 will be closed***.***

If any changes were made for active position data or program data, the validation will be displayed whether to be save. Otherwise, it will close with no validation.

【Edit】

[Copy] [Edit]-[Copy]

It allows copying position data or program data in an active screen.
It will not allow copying cells over multiple columns.

[Paste] [Edit]-[Paste]

It allows pasting copied data to an active position data or program data screen.
Multiple cells can be pasted, but it will not allow pasting over multiple columns.
If copied multiple rows are multiple of copied rows, repeated data will be pasted.

[Insert Row] [Edit]-[Insert Row]

It allows inserting rows to a table of position data or program data in an active screen.
If multiple rows are selected and inserted, the selected number of rows will be inserted.

[Delete Row] [Edit]-[Delete Row]

It allows deleting rows to a table of position data or program data in an active screen.
If multiple rows are selected and deleted, the selected entire rows will be deleted.

【View】

[Enlarge Icons] [View]－[Large Icons]

It allows toggling Large/ Small of icons on the menu bar.
Set a size as preferred.

[Parameters] [View]-[Parameters]

A parameter window is displayed and allows editing parameters. Main functions are as follows:

(1) Reading parameters from controllers,
(2) Writing parameters to controllers,
(3) Loading parameters from a saved file, and
(4) Saving parameters in a file.

See “Parameters” in page 44 regarding contents and commands of each item for parameters.

[Options] **[View]-[Options]**

◆ Communication Port No.

Communication port No. will be configured. Communication ports from COM1 to COM16 are configurable.

As a default, COM1 is configured. If the configuration was incorrect and the PC communicated with the controller, XA-PA4 may be terminated.

When the communication was not successful, verify the communication port configuration and retry the communication.

Refer to “Communication Port Configuration” on page 14.

◆ Position Calculation

Target position data is processed based on pulse. Thus, if the unit is displayed as mm and the input position is indivisible by the pulse, a position that is divisible by pulse will be automatically found. The input position will be modified to the closest position.

If the input value was halfway between positions, it allows configuring to round up or down the position to the appropriate position (mm).

◆ Display Unit

It allows configuring a display unit either in mm or pulse for target positions. If the display unit has changed from mm to pulse, the pulse for each position will be re-calculated based on the displayed value in mm. Thus, the value will be updated.

※ Target positions are processed in pulse inside controllers and PC. There are some restrictions such as for position inputs.

◆ Language

It allows setting a language to display. Select English or Japanese.

If the language settings have changed, close XA-PA4 and restart XA-PA4.

After restarted, the settings will be reflected.

Command Buttons

[Settings]: It allows changing settings. Then, the option window will be closed.

[Cancel] : It allows canceling setup changes. Then, the option window will be closed.

【Position Data】

[Read] **[Position Data]-[Read]**

It allows reading position data from controllers.
The data will be read by setting up the start position No. and the end position No.

[Check] **[Position Data]-[Check]**

It allows checking if the position data in the screen is out of configured range.

[Write] **[Position Data]-[Write]**

It allows writing position data on the screen to controllers.
The data will be written by setting up the start position No. and the end postion No.

[Verification] **[Position Data]-[Verification]**

It allows verifying position data in the screen with one in controllers.

【Program】

[Read] [Program]-[Read]

It allows reading program data from controllers.
The data will be read by specifying program No.

[Check] [Program]-[Check]

It allows checking program data in the screen.

[Write] [Program]-[Write]

It allows writing program data in the screen to controllers.
The data will be written by specifying program No.

[Verification] [Program]-[Verification]

It allows verifying program data in the screen with one in controllers.

[Delete] [Program]-[Delete]

It allows specifying program Nos. and deleting them from controllers.
Multiple programs can be selected and deleted in the screen.

【Controller】

[Version Verification]

[Controller]-[Version Verification]

It displays the version of ***XA-A Series Conroller.***

Eample : **<Main> 100**
<Axis 1> 101

It displays that the main version of ***XA-A Series Controller*** is represented as “100”, Axis 1 as “101”, etc. (If the version information was not successfully obtained, ”no version information” will be displayed.)

[Alarm Reset]

[Controller]-[Alarm Reset]

It allows resetting alarms of controllers in communications.

【Monitoring/ Program Execution】

Input/ Output Status

Once the Monitoring/ Program Execution screen was opened, the input/ output status will start to be monitored and displayed. A symbol “○”represents that the input/output is ON. A symbol “－” represents the input/output is OFF.

Output Change

During monitoring, the output status can be toggled by double clicking on a certain output display.

Current Value Display

Current values for each axis are displayed.

Monitoring for Flags, Variables, and Position Variables

Flags, variables, and position variables for each program can be monitored.

Program Execution/ Abort

Program progress status can be monitored. Also, it allows executing or aborting a program by selecting program No.

Alarm Reset

If an alarm went off during monitoring, an alarm-reset button will be displayed. Once the cause of the alarm is removed and the alarm reset button is clicked, the alarm will be reset and the monitoring will be resumed.

● **[Monitoring/ Program Execution]** allows communicating with controllers. Connect PC to ***XA-A Series Controllers*** with communication cables.

【Settings】

[Online] **[Settings]-[Online]**

It allows PC to go online.

[Offline] **[Settings]-[Offline]**

It allows PC to go offline.

[Online Device Settings] **[Settings]-[Online Device Settings]**

When changing a device in PC software, it allows updating only necessary parameters to change the device by communicating with controllers.
If the device is not configured successfully, the position will not be displayed correctly. Verify if correct devices are used.

[Offline Device Settings] **[Settings]-[Offline Device Settings]**

It allows changing a device only on PC without communicating with controllers.

If the device is not configured successfully, the position will not be displayed correctly. Verify if correct devices are used.

【Window】

[Cascade] **[Window]-[Cascade]**

When multiple program windows are displayed, the windows will be cascaded.

[Tile Horizontally] **[Window]-[Tile Horizontally]**

When multiple program windows are displayed, the windows will be tiled horizontally.

[Tile Vertically] **[Window]-[Tile Vertically]**

When multiple program windows are displayed, the windows will be tiled horizontally.

【Help】

[Contents] **[Help]-[Contents]**

Contents of the help file are displayed.

[About] **[Help]-[About]**

The software version information is displayed.

Toolbar

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)

(1) Create New Position Data: represents **[File]**-**[New]**-**[Position Data]**

Position data in a screen is initialized and new position data is created.

(2) Open Position Data File : represents **[File]-[Open]-[Position Data]**

Position data saved in a file is loaded and displayed.

(3) Create New Program Data: represents **[File]-[New]-[Program Data]**

Program data in a screen is initialized and new program data is created.

(4) Open Program Data File : represents **[File]-[Open]-[Program Data]**

Program data saved in a file is loaded and displayed.

(5) Save : represents **[File]-[Save]**

If the file has a filename, the position data will be overwritten. If the file does not have a filename, the file is to be saved as a new filename.

(6) Save As : represents **[File]-[Save As]**

If the file has a filename, the position data will be overwritten. If the file does not have a filename, the file is to be saved as a new filename.

(7) Insert Row : represents **[Edit]**-**[Insert Row]**

It allows inserting rows to a table in an active position data screen or program screen. Click on a location where the rows are to be inserted and execute it.

(8) Delete Row : represents **[Edit]-[Delete Row]**

It allows deleting rows from a table in an active position data screen or program screen. Select rows to be deleted and execute it.

(9) Copy : represents **[Edit]-[Copy]**

Click on rows or cells to be copied and execute it.

(10) Paste : represents **[Edit]-[Paste]**

Click on locations where the data is to be pasted and execute it.

(11) Read Position Data **:** represents **[Position Data]-[Read]**

Position data is read from controllers and displayed.

(12) Read Program Data: represents **[Program]-[Read]**

Program data is read from controllers.

(13) Data Check **:**

It allows checking data in an active position data screen or program screen. Click on a screen to check data and execute it after displaying the screen up front.

(14) Write Data **:** represents **[Position Data]**-**[Write] or**
: represents **[Program]**－**[Write]**

It allows writing data an active position data screen or program screen to controllers. Click on a screen to write data and execute it after displaying the screen up front.

(15) Data Verification **:** represents **[Position Data]**-**[Verification]** or
: represents **[Program]**-**[Verification]**

It allows verifying data in an active position data screen or program screen with controllers. Click on a screen to verify data and execute it after displaying the screen up front.

(16) Print **:** represents **[File]-[Print]**

It allows printing position data or program data displayed in a screen.

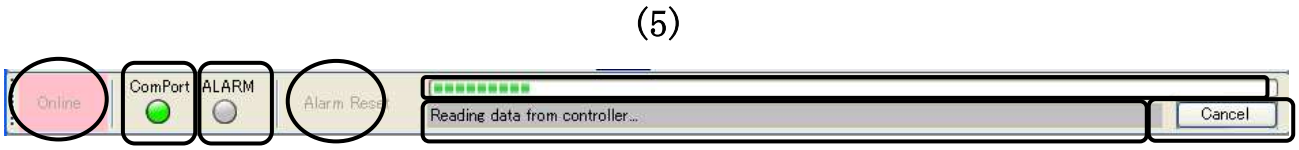
(17) Monitoring/ Program Execution: represents **[Monitoring/ Program Execution]**

It allows monitoring current values, flags, variables, and position variables from external I/O and or each axis. Also, the program progress status will be monitored.

(18) Teaching **:**

Open a position data screen and go to a Jog/ Teaching screen. With a communication cable, go online and execute it.

Status & Reset Button



(1) Online/ Offline Button

It allows toggling between Online and Offline

Verify if COM Nos. of communication ports match with the PC software configuration when the communication is made for the first time. Refer to “Communication Port Configuration” on page 14 for details.

(2) Serial Port Status Display

- Color of Light: White ・・・Serial Port (RS-232C) is closed. Not communicated. (Offline)

  Green ・・・Serial Port (RS-232C) is open. Communicating or ready to communicate (Online)

(3) Alarm Status Display

- Color of Light : White ・・・Normal

  Red ・・・Alarm occurred

(4) Alarm Reset Button

After alarms occurred for controllers, it allows resetting alarms by clicking on it.

(5) Communication Progress

Communication progress will be displayed in a progress bar.

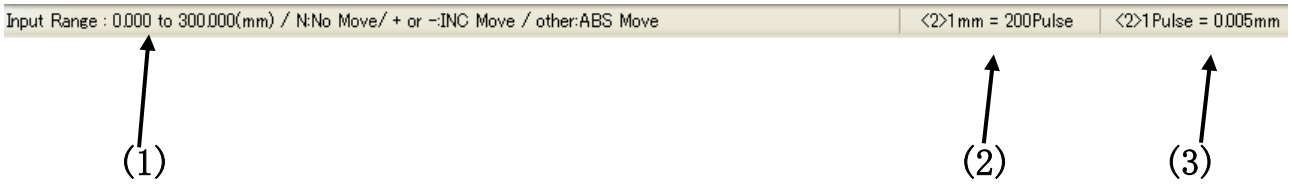
(6) Communication Status

Communication status will be displayed.

(7) Cancel on Communication Process

When communication process takes some time, a cancel button will be displayed. The process can be cancelled by clicking on it.

Status Bar



(1) Version Information And Contents of Errors for Controller, etc.

The version will be displayed when the version was read from the controller. When errors occurred, the contents will be displayed. If the controller is not communicating with PC, nothing will be displayed.

Example: Controller's version 100

(If the controller's version information was not successfully read, "no version information" will be displayed.)

It allows displaying the input range of the cell and the units of input items by clicking on the cell to input position data.

※Controller's version will not be displayed during offline.

(2) Device Information 1 for Actuator at Selected Axis

It allows displaying the required pulse for the actuator at the selected axis to move by 1mm.

(3) Device Information 2 for Actuator at Selected Axis

It allows displaying the conversion value of motion distance by one pulse for the actuator at the selected axis.

Position Data Edit

The position data screen allows editing position data. (Disabled axis will neither be displayed nor edited.)

Position data can be read from files or controllers. It can also be saved in files or written to controllers. In addition, it allows verifying with position data displayed in the screen.

Refer to page 32 for position data configuration.

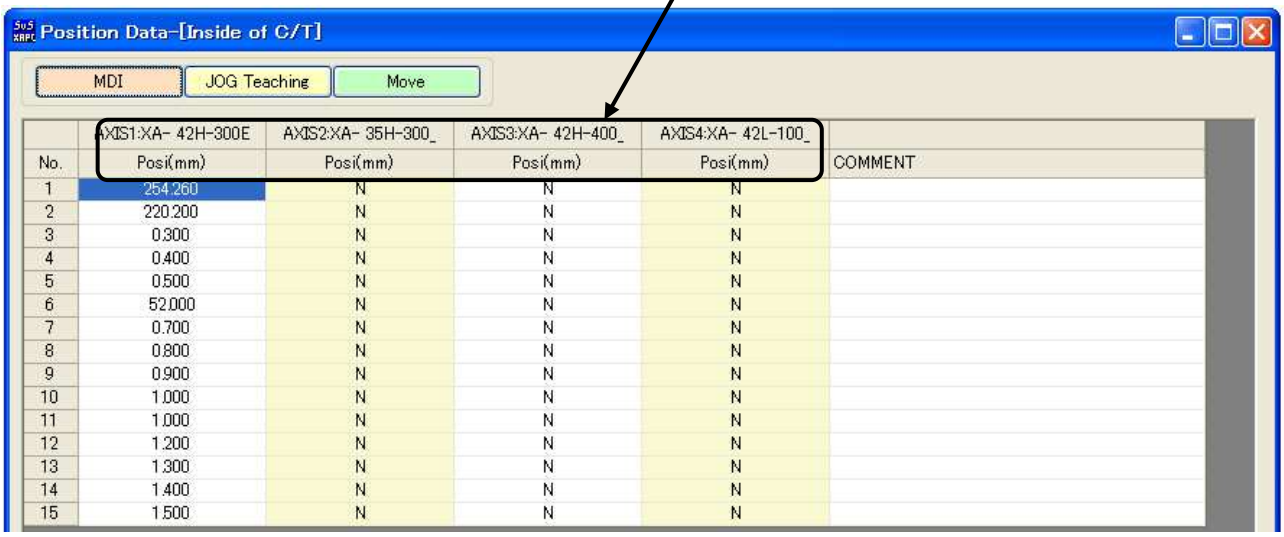
In order to edit position data, there are two ways.

(Method A) Go to [Position Data] – [Read] on the menu bar.
(Method B) Go to [New] – [Position Data] on the menu bar.

If the controller is communicatable, Method A, which is easier, is recommended.

(Method A) Go to [Position Data] – [Read] on the menu bar.
In this example, positions No. 1 through 15 are specified and read from controllers.
※ The controllers will communicate with PC. Make sure to connect communication cables before executing.

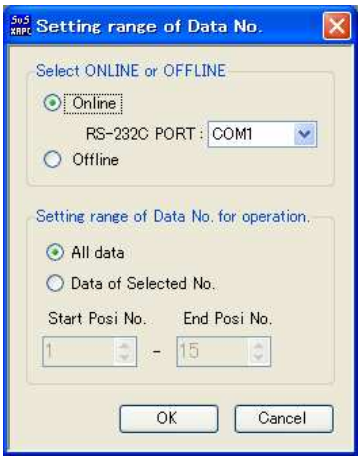
Device (Disabled axis will be hidden.)



The information such as a stroke and velocity type will be read for each axis by communicating with controllers. In addition, position data configured by controllers will be displayed.

(Method B) Go to [New] – [Position Data] on the menu bar.

Go to [New] – [Position Data] on the menu bar. The following screen will be displayed.



<Online>

If controllers are ready to communicate with PC, select the online option.

Once the online option is selected, information such as a stroke and velocity type will be read through communication with controllers. Position data will be newly created. Thus, the data will be configured as “N (no motion)” for all.

<Offline>

If controllers are not ready to communicate with PC, select the offline option.

When the offline option was selected,

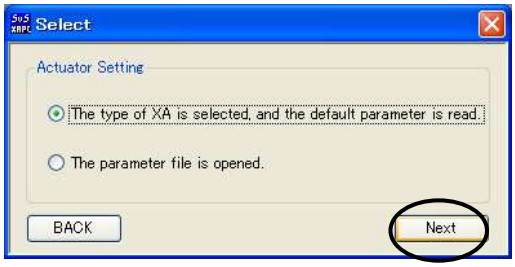
(i) Select a stroke and velocity type.

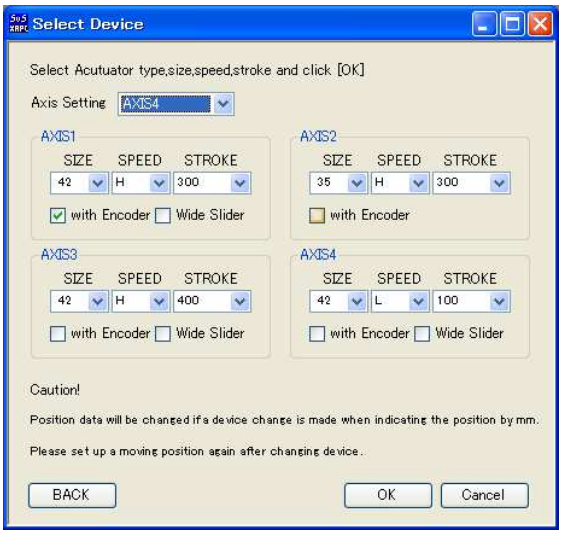
(ii) Load parameter files.

One of the above will be required to select.

As an example, (i) Select a stroke and velocity type was selected.

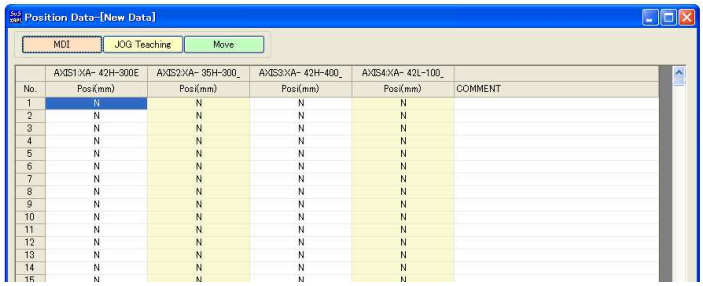
The following screen will be displayed to select axis configurations for XA-A series Controllers and a velocity type/ stroke.





If a wrong device were selected, the target position would not be configured correctly. Before editing, make sure if the appropriate device is correctly configured.

Displayed position data in the screen will be all “N (no motion)”.



Position Data

Target positions (including +/- signs and “N”) are to be determined for each position No. Input setup values by selecting appropriate cells in the PC software.

※ Neither velocity nor acceleration is to be configured in Position Data. They are configured in programs.

Items	Configurations And Input Restrictions
Target Position (Position)	Target positions for each position No. are configured in a unit of mm (or pulse). (The unit of position is configurable as options.) However, note that values with +/- make differences for target positions. Configurable input range ・0 to stroke length in mm ・Configurable values are from 0 to manufacturer specific value limit (parameter: value configured in STROKE) in pulse. N: No motion +/- (signed): Move from current position to positive side or negative side. Unsigned : Move to absolute positions based on home position. (Depending on the command, there are some difference. Verify with the commands.) Depending on the input methods (signed/ unsigned) mentioned above for target positions, note that the motions will be different.
Comments	Input comments when comments are required for each position No. Select a cell and input comments by keyboard. To edit, select the cell and press a space key. Maximum number of characters to input is 20. ※ The comments will not be written to controllers. Thus, nothing will be displayed in the screen when position data was read from controllers. It is recommended that position data be saved in a file before writing it to controllers.

Input Function to Modify Target Position

Target position data is processed inside controllers based on pulse.

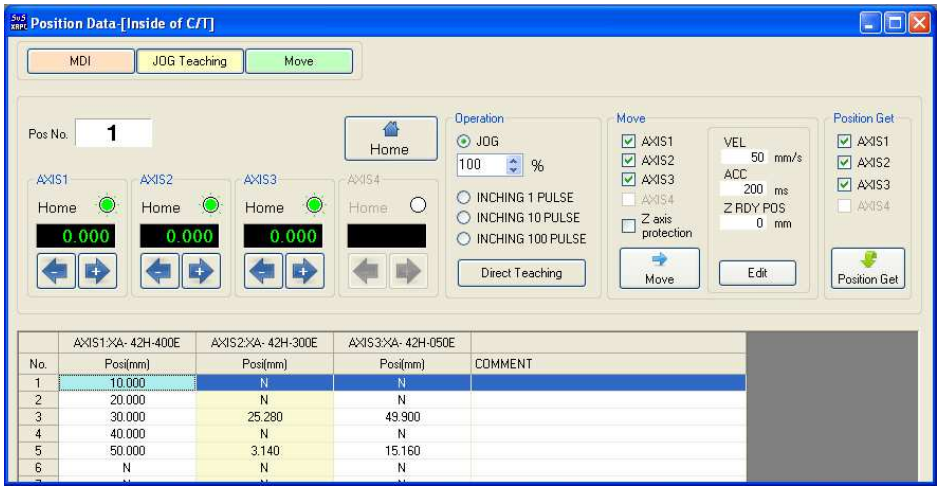
Thus, in mm display for the position input, if positions indivisible by pulse were input, divisible positions will be automatically found. Then, the input positions will be modified to the closest values to them.

As a result, the data is slightly different from the input position data by keyboard. However, it is not a defect of the PC software.

Generally, if the values are indivisible, the pulse will be rounded. If the indivisible pulse is 0.5 pulse, either rounding up or down to position data (mm) can be configured by [View]-[Option]-[Position Calculation] on the menu bar. The default settings are rounding up. Thus, 0.5 pulse will be rounded up to 1.

JOG Teaching

In JOG teaching screen, it allows teaching target positions.
Axes will move to a certain target position in jog feed or pulse feed. The position data will be loaded to a table.
With a teaching function, it will be easier to edit target positions.



For more information on each command button, refer to page 36.

Teaching Procedure for Target Position

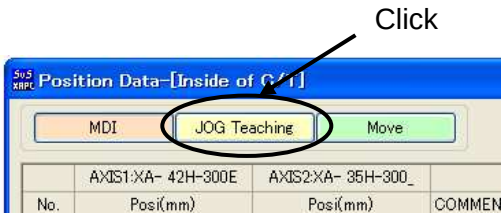
① Position Data Display

In order to start teaching, it is required to display position data in the PC software.

There are two ways as follows:
(Method A) **[Position Data] – [Read] on the menu bar (Recommended)**
(Method B) [New] – [Position Data] on the menu bar
Display position data in one of the above methods.

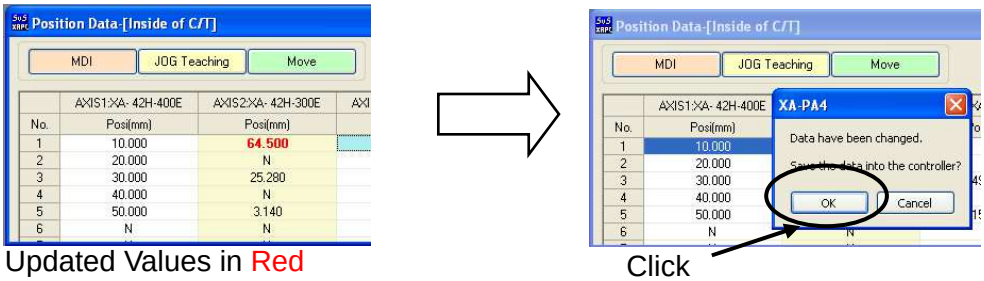
② Start Teaching

Click on [JOG Teaching] in a position data screen to start teaching.



Perform homing if homing is not completed.

If there are updated values (in red) in the position data, a validation will come up whether to write them to controllers or not. If the updated values are to be reflected to controllers, click OK.



Updated Values in Red

Click

③ Set Positions in Jog/ Constant Rate of Feed/ Direct Teaching※1

Select teaching and click on Forward/ Backward buttons for each axis to set a certain position.

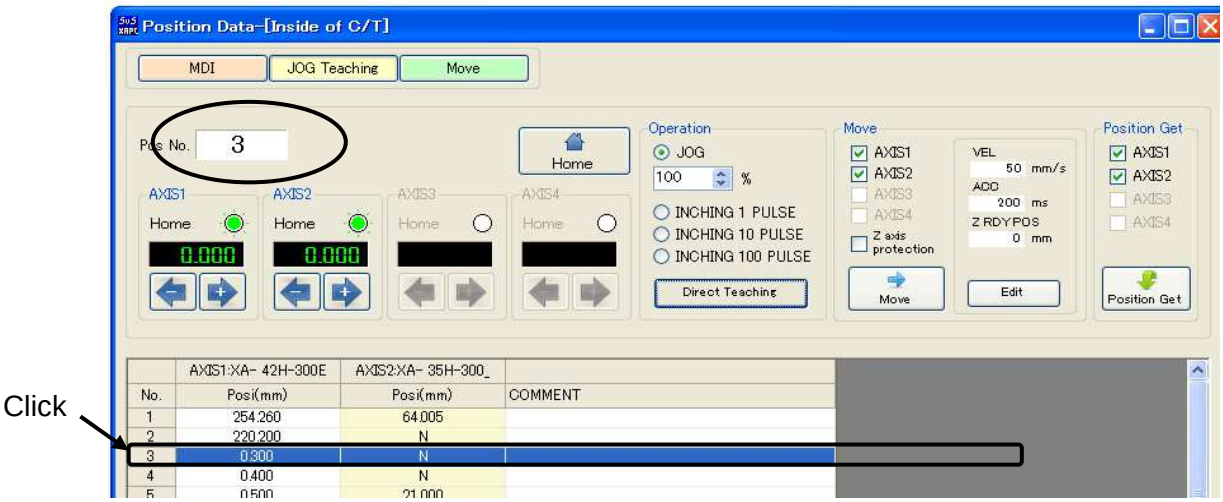
If XA-A Series Controllers come with encoders, press Direct Teaching button. Direct Teaching can be performed by turning off the excitation of the motor※2.

※1 Direct Teaching cannot be performed for axes without encoders.

※2 If the velocity type is a low velocity type (L), the axes cannot be pushed by hands. For the low velocity type, it is performed by rotating a manual slot.

④ Write Configured Position

Once the position was set, select a position No. to write the displayed current value in.
To select the position No., click on a row of the position No. to be written.
After selecting the position No., click on [Position Write] button. The written value will be written to controllers.
Until the teaching is completed, the motion and the downloading will be repeated.



⑤ Motion Test

Select a position No. to move to and click on “Move” button.
In a motion test, generally, each axis will move in the following order.

Z axis goes up → X and Y axes (and axis 4, if available) move → Z axis goes down

If **[Z Axis Protection Disable]** is checked, note that all axes will move simultaneously.

If the motion velocity is to be changed, click on [Settings] button and configure the velocity and acceleration.

⑥ Teaching Complete

Once all teaching is completed, click on [MDI] button or [Move] button.

Definitions of Commands

◆ **[Position Write] Button**

Read the current values of axes in, whose checkboxes are checked, and write them to a selected position No.

Teaching Buttons

The buttons can move enable axes among axes 1 through 4. Also, they can move only specific axes by checking the checkboxes.

◆ **Forward Button※**

This button allows moving forward enable axes by jogging or constant rate of feed (1 pulse, 10 pulses, or 100 pulses)

◆ **Backward Button※**

This button allows moving backward enable axes by jogging or constant rate of feed (1 pulse, 10 pulses, or 100 pulses)

※ It may stop communicating if the Forward and Backward buttons were hit hard repeatedly. Do NOT hit the buttons hard repeatedly.

◆ **[Direct Teaching] Button And [ON]/ [OFF] Button for Motor**

These buttons will be available if there are axes with encoders amoung axes 1 through 4. When [Direct Teaching] button is clicked, [ON]/ [OFF] button for the motor excitation will be available. It allows turning off the motor excitation.

Motion

◆ **[Move] Button**

This button allows moving axes to selected position Nos. It also allows selecting axes to move.

◆ **[Settings] Button**

It allows setting velocity/ acceleration and holding positions for axis 3 (Z axis) in motion.

Definitions of Option Buttons

Axes behaviors are to be configured such as in whether jog feed or specific pulse feed for teaching.

○ **JOG Feed**

JOG Feed will be performed. While the move button is kept pressing, the axes will keep moving. Once the button is released, they will stop.

JOG Feed Velocity

The motion velocity can be changed for teaching. Prior to the motion, the velocity setting (%) is to be adjusted by an up/ down button. If the velocity is to be set as half as the configured velocity, set it as 50 (%).

○ **Constant Rate of Feed (100 pulses/ 10 pulses/ 1 pulse)**

Every time the move button is clicked, it moves only by the selected pulses.

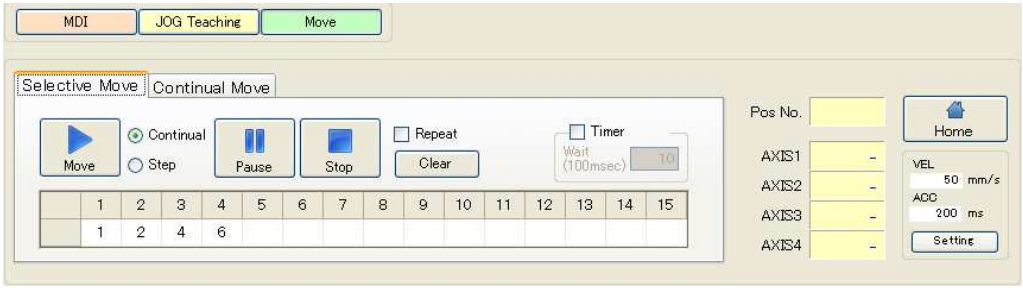
Motion Test

Motion tests allow ***XA-A Series Controller*** to move to a specific position. There are two options available. One is an alternative motion. The other is a sequencial motion.

◆ Selective Move

Certain position Nos. can be input in a preferred order. The motion can be performed in sequence or one by one.

Fifteen positions can be input at maximum. The input range of position No. is from 1 to 3000.



[Move] Button

The motion will start. When “Continual” is selected, axes will start moving to input positions in sequence. When “Step” is selected, axes will move to position by position in the input order.
If “Repeat” is checked, the axes will stop once the motion reached to the input position.
If “Repeat” is unchecked, the motion will not stop until [Stop] button is clicked.

[Pause] Button

The motion will pause. If [Move] button is clicked after that, the axes will move to next position in the input order.

[Stop] Button

The motion will stop. If [Move] button is clicked after that, the axes will move to the first input postion.

Move Way

Move way can be selected either “Continual” or “Step”

“Continual” motion allows moving to input positions in sequence.

“Step” motion allows moving to position by position in input order.

[Repeat]

If “Repeat” is unchecked, XA will stop once the motion reached to the input position. If repetitive motions are required, “Repeat” checkbox is to be checked.

[Timer]

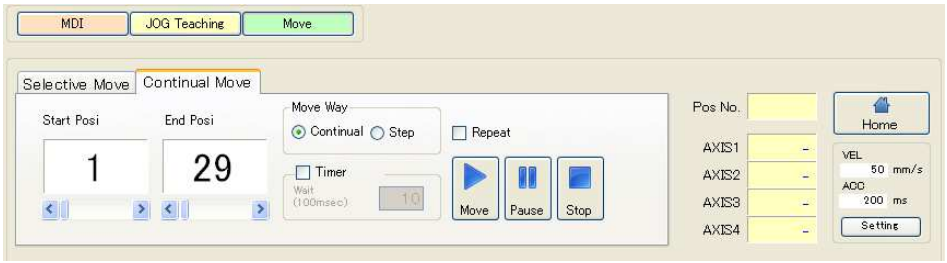
If delay is required between motions, “Timer” checkbox is to be checked and the delay duration is to be input in 100 msec increments. (e.g. “10” represents 1 sec.)

[Clear] Button

It allows deleting all of input target positions all at once.

◆ Continual Move

Axes can move to sequence multiple positions in sequence. (in a selection of “Continual”)
Axes can also move to only one specific position. (in a selection of “Step”)



[Start Position No.]

Specify the start position in the sequencial motion.

[End Position No.]

Specify the end position in the sequencail motion.

※ The position Nos. can be configured by using a left-right button or slider.

[Move Way]

“Continual” motion allows moving to configured target positions in sequence.

“Step” Motion allows moving to a position.

※ The position Nos. can be configured by using a left-right button or slider.

[Timer]

If delay is required between motions, “Delay” checkbox is to be checked and the delay duration is to be input in 100 msec increments. (e.g. “10” represents 1 sec.)

[Repeat]

If “Repeat” is unchecked, it will stop once the motion reached to the configured position. If repetitive motions are required, “Repeat” checkbox is to be checked. The motion will be repeated until [Stop] button is clicked.

[Move] Button

The motion will start.

“Continual” motion allows moving to configured target positions in sequence.

“Step” Motion allows moving to a position.

If “Repeat” is unchecked, the axes will stop once the motion reached to the input position.

If “Repeat” is checked, once the motion reached to the end position No., the axes will come back to the start position No. The motion will be repeated until [Stop] button is clicked.

[Pause] Button

The motion will pause. If [Move] button is clicked after that, the axes will move to next position in the input order.

[Stop] Button

The motion will stop. If [Move] button is clicked after that, the axes will move to the start position No.

Miscellaneous Common Screen

Motion Complete Position No.

When XA completed the motion, the position No. will be displayed. (After homing, “HO” will be displayed.)

Current Value for Each Axis

When XA completed the motion, the current value for each axis will be displayed.

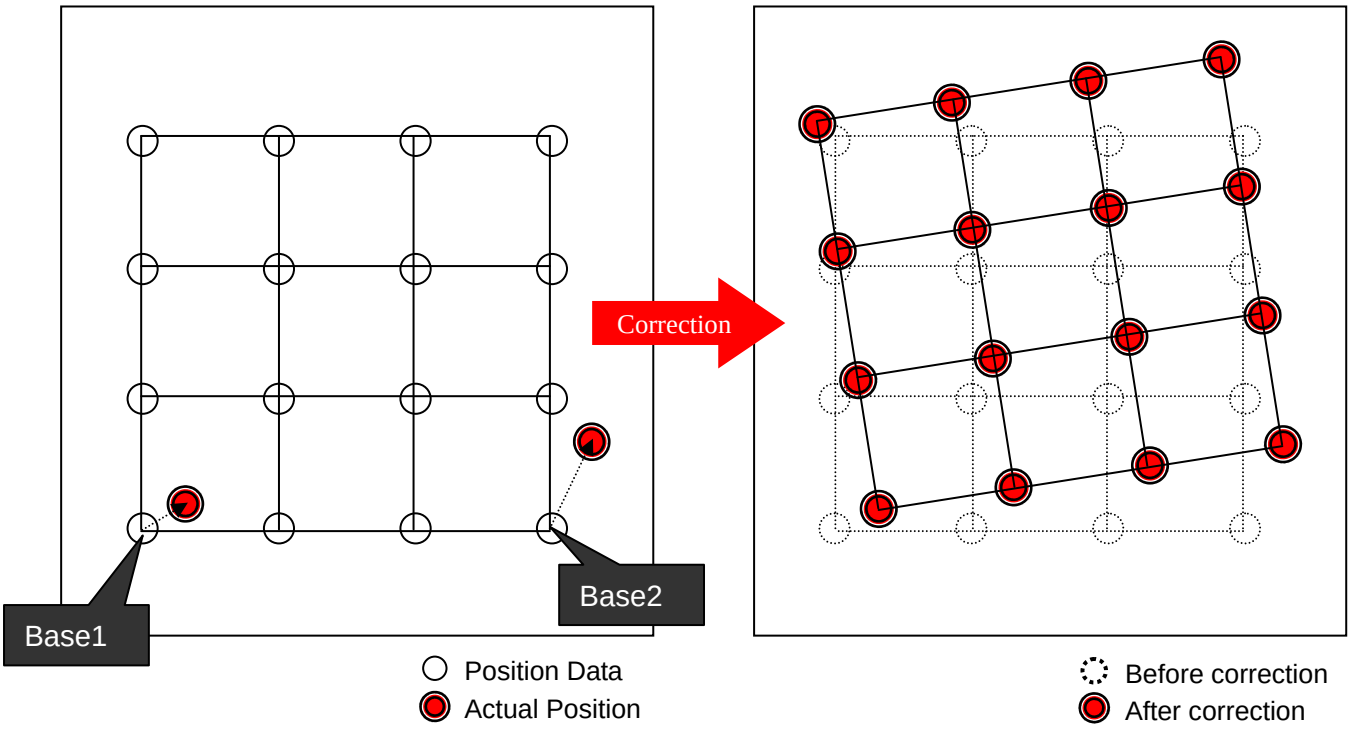
[Home] Button

Homing will be performed.

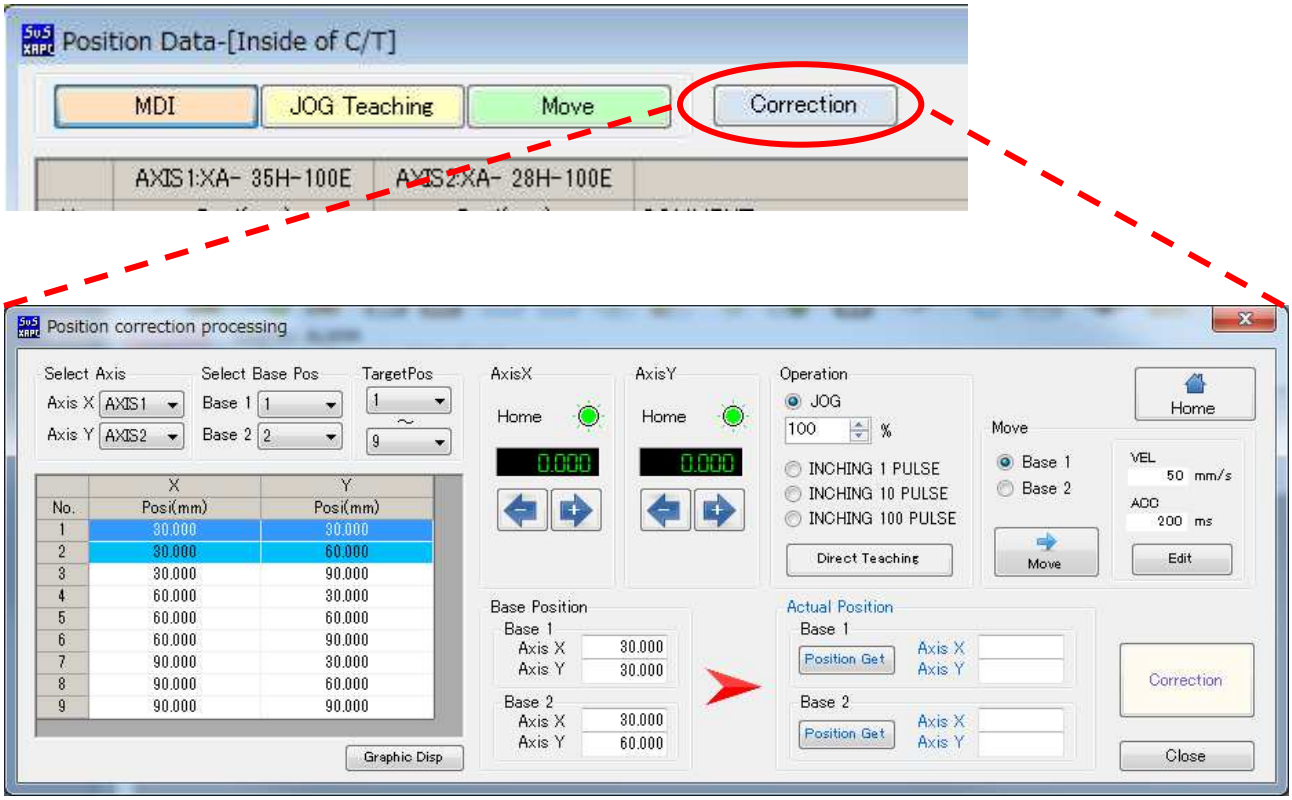
Position correction function

It is a function to correct the position of the position data set. I will start in "Position correction" button.
(※ correction only tilt correction)

[Corrected image]



[Screen Description]



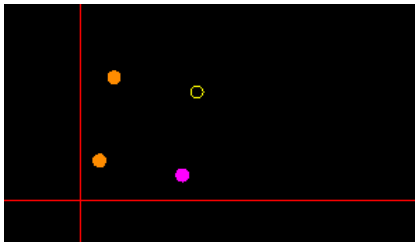
[Select Axis] combobox
It set the axis number axis that is connected to the X-axis · Y-axis.

[Select Base Pos] Combobox
You can set the PosNo to become base when performing correction to one base-2 base.

[Target Pos] Combobox
It want a range of PosNo target to be corrected.

[Position Data]
Show me the position data of the X-axis · Y-axis that is selected in the Selection.
Row background color is attached is PosNo that is selected in the base.

[Graphical Disp] button
It graphic display the location of the position data.



*The position that is selected in the base point fill.

*The position that is chosen now in the top of position data of the highlight paint it over, and is indication.

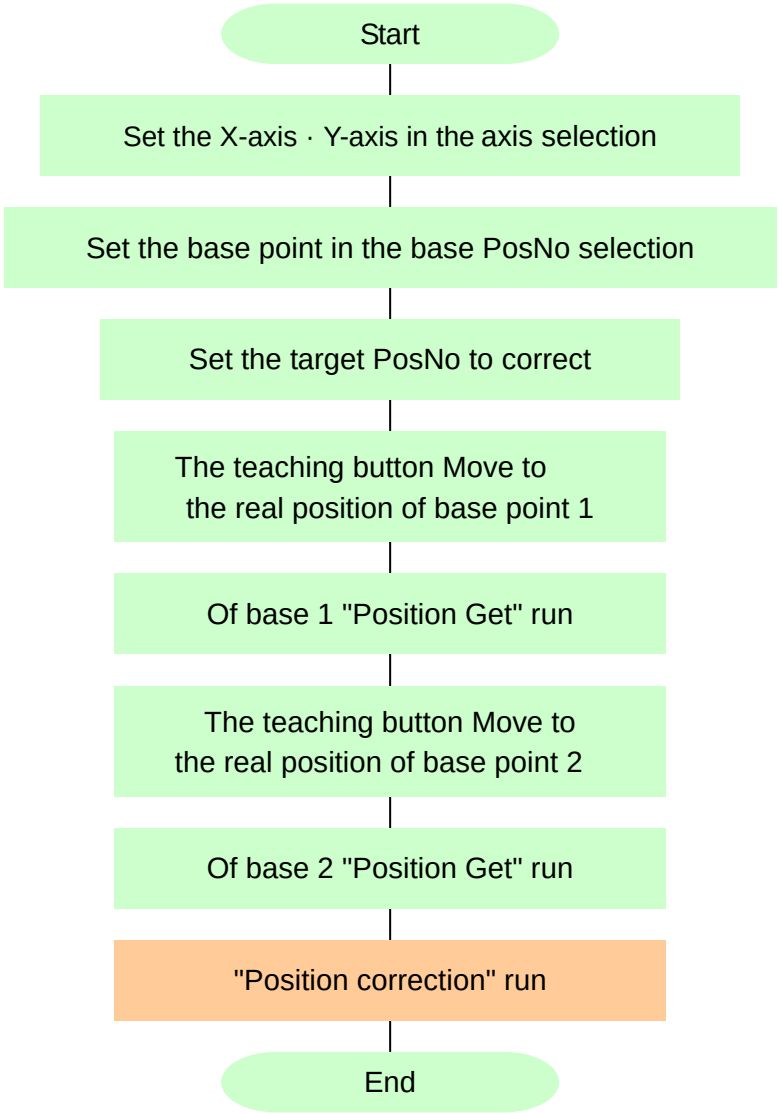
Various [Teaching] buttons
It is Teaching buttons to move it at the true position.
(as for the movement like Teaching screen)

[basic point position] text box
I display the position of a chosen basic point.

[true position] text box
I set a position in text box now by pushing the "position uptake" button.

[position revision] a button
I calculate the position revision and overwrite the value that position data were corrected.
The confirmation screen which updates the data of the controller when I close a position revision screen
It is displayed.

[Correction procedure]

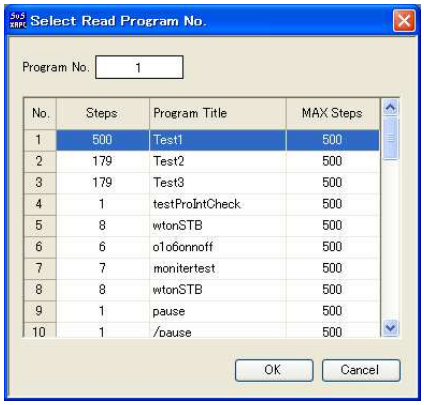


Program

XA –PA4 allows editing programs.
Edited programs can be written to controllers and/ or saved in a file. They are also verified with controllers and/ or printed.
※ For programs, refer to XA-A Series Controller User's Manual.

Edit Program

There are two ways to edit programs.



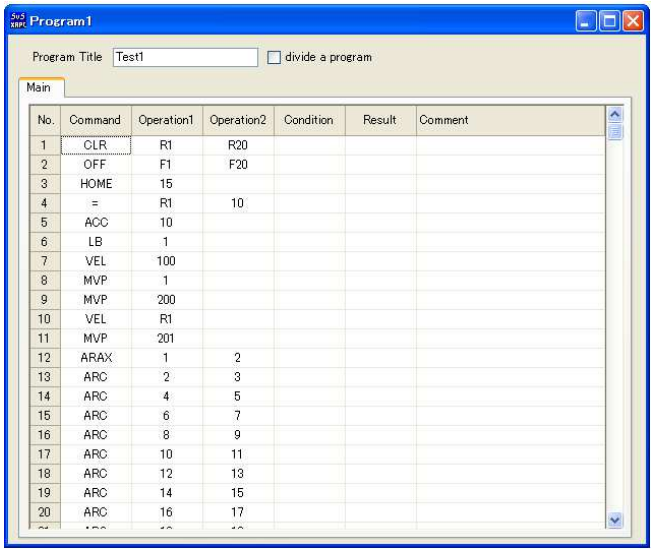
(Method A) A program currently written are loaded and modified.
Go to **[Program] – [Read]** on the menu bar.
(Program Read button can be clicked from a toolbar.)
A program No. screen will be displayed for selection. Select a program No. to read and click OK.
(During reading, do NOT click on other screens.)

(Method B) A new program is created.
Go to **[File] – [New] – [Program Data]** on the menu bar. A program No. screen will be displayed for selection.
Depending on the program No., the available number of steps may vary.
(No.1 to No.15: 500 steps, No.16 to No.50: 100 steps)

Once the program list is displayed, start editing.

Add New Row

After selecting the last row, press ↓ (down arrow) key. A new row will be added at the bottom.



Insert Row

Select a certain row where a new row is to be inserted. Then, follow the following procedure.

- Toolbar: **[Insert]** button
- Menu: **[Edit] – [Insert Row]**
- Shortcut Key: Ctrl + Insert

Delete Row

Select a certain row to delete. Then, follow the following procedure.

- Toolbar: **[Delete]** button
- Menu: **[Edit] – [Delete Row]**
- Shortcut Key: Shift + Delete

Copy Row

Select rows to copy and follow the following procedure.

- Toolbar: **[Copy]** button
- Menu: **[Edit] – [Copy]**
- Shortcut Key: Ctrl + C

Paste Row

Select rows to paste copied data and follow the following procedure.

- Toolbar: **[Paste]** button
- Menu: **[Edit] – [Paste]**
- Shortcut Key: Ctrl + V

Check Program

It allows checking a program for errors. If there are errors, the row numbers and the contents will be displayed.

- Toolbar: **[Check Data]** button
- Menu: **[Program] – [Check]**

Write Program

It allows writing a program to controllers.

- Toolbar: **[Write Data]** button
- Menu: **[Program] – [Write]**

Save Program Files

It allows saving a created program to a current file.

- Toolbar: **[Save]** button
- Menu: **[File] – [Save]**

Save Program Files (Save As)

It allows saving a program to a file. Even if errors occurred in the program, it allows saving the program after displaying the errors.

- Toolbar: **[Save As]** button
- Menu: **[File] – [Save As]**

Verify Program

It allows verifying a program in a screen with a selected one in controllers.

- Toolbar: **[Verification]** button
- Menu: **[Program] – [Verification]**

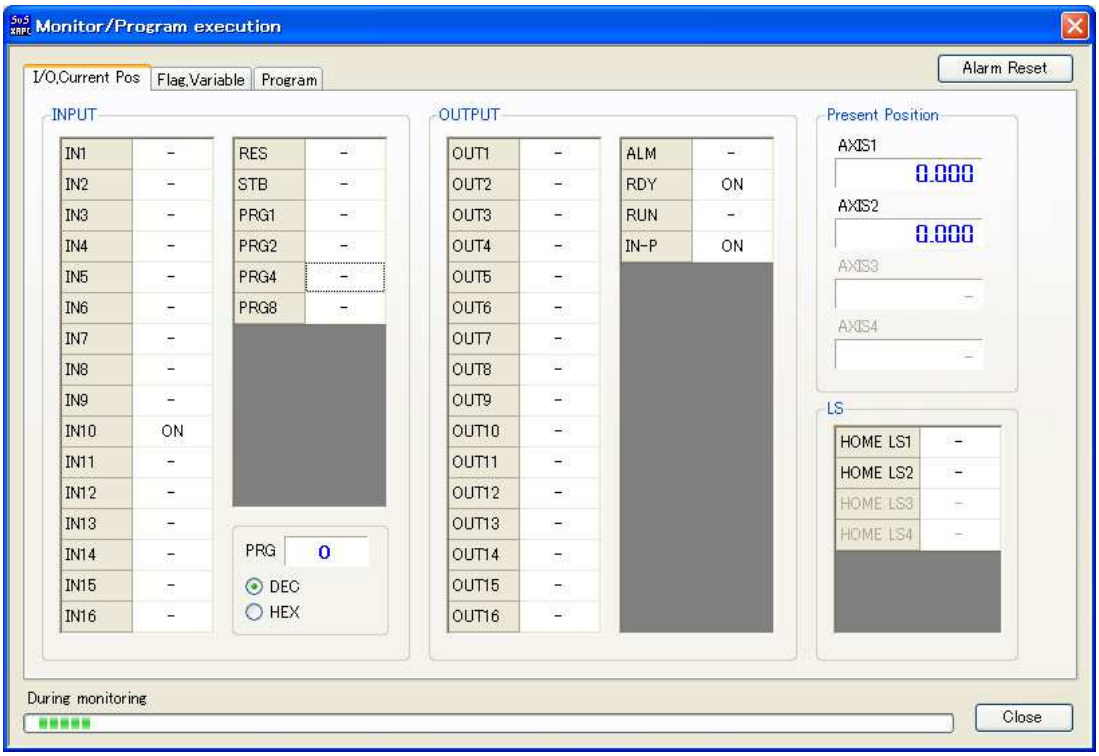
Print Program

It allows printing a program in a screen. Even if errors occurred in the program, it allows printing the program after displaying the errors.

- Toolbar: **[Print]** button
- Menu: **[File] – [Print]**

Monitoring/ Program Execution

Go to [Monitoring/ Program Execution] on the menu bar. The monitoring window will be displayed. It allows verifying input/ output status and current values, and changing the output status. In addition, flags, variables, and position variables can be monitored by switching tabs. It also allows executing and terminating a program while the program performance is being monitored.



I/O & Current Value

After starting monitoring, input status will be displayed in “INPUT”. Output status will be displayed in OUTPUT. The display will be as follows:

- :OFF / ON

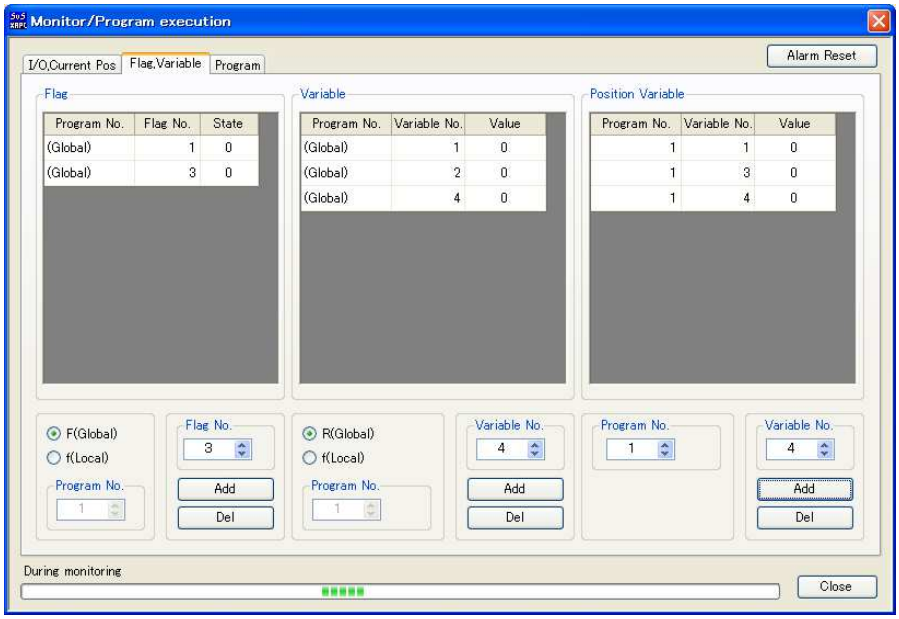
Current values for each axis will also be displayed.

Change Output Status

Double click on the output status during monitoring. The status can be toggled.

Flag/ Variable

It allows monitoring flags, variables, and position variables.



Click **[Add]** button to register flags and variables to be monitored.
Registered items will be saved even after closing the screen so that the registered items will be displayed when the monitoring screen was opened next time.

Program Execution/ Termination

Click on Program tab in Monitoring/ Program Execution screen. It allows monitoring a running program and executing/ terminating a program specifying the program No.
To open the Monitoring/ Program Execution screen, go to [Monitoring/ Program Execution] on the menu bar. Click on Program tab in the Monitoring/ Program Execution screen.

Program Execution

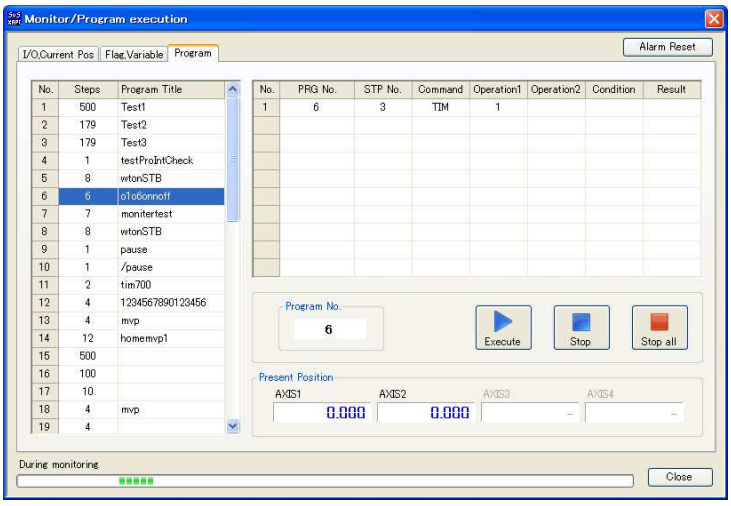
Select a certain program No. in the table at the upper left corner. Then, click [Run].

Program Termination

Select a currently running program in the table at the bottom. It allows terminating the program one by one by clicking [Stop] button.

All Program Termination

Click on [Stop All]. It allows terminating all the running program.



Settings

[Settings] on the menu bar allows modifying settings for device.
[Online Device Modification] allows modifying stroke, etc. and parameters associated with them.
For more detail settings, go to [View] – [Parameters] and open a parameter window. It allows modifying parameters.

※Appropriate values are configured for parameters based on devices. It is NOT recommended to change parameters. If the parameters have been changed, the devices may not perform correctly.

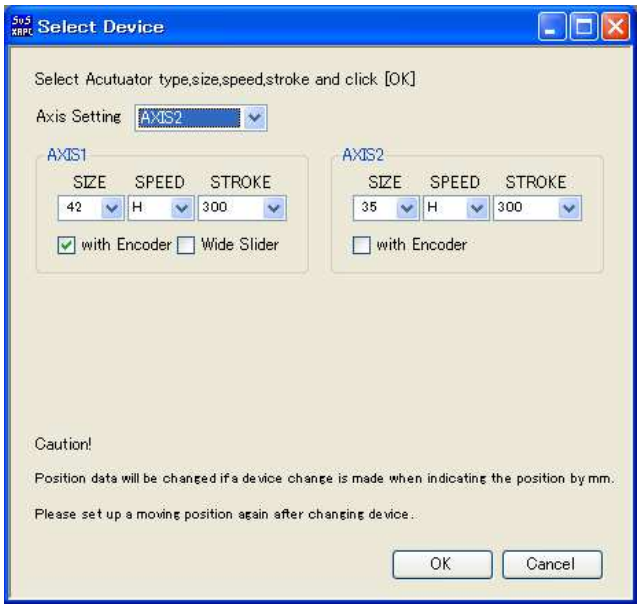
Online Device Change

It allows changing devices and configuring axes. This feature allows configuring the appropriate values to required parameters for devices by simple selection.

Change Procedure

① Go to **[Settings] – [Online Device Change]**.
② Select axis configuration and stroke/ velocity type for each axis.
③ Click on **[Change And Write]**.
(No motion by external input signals can be made during writing.)
④ The change is completed when a message stating, “Writing was successful”, was displayed.

※ **[Online Device Change]** requires communications with controllers. Make sure that controllers are connected in communication cables.



Offline Device Change

It allows configuring axes in the offline state and stoke/ velocity type for each axis without connecting XA-A Series Controller.

Change Procedure

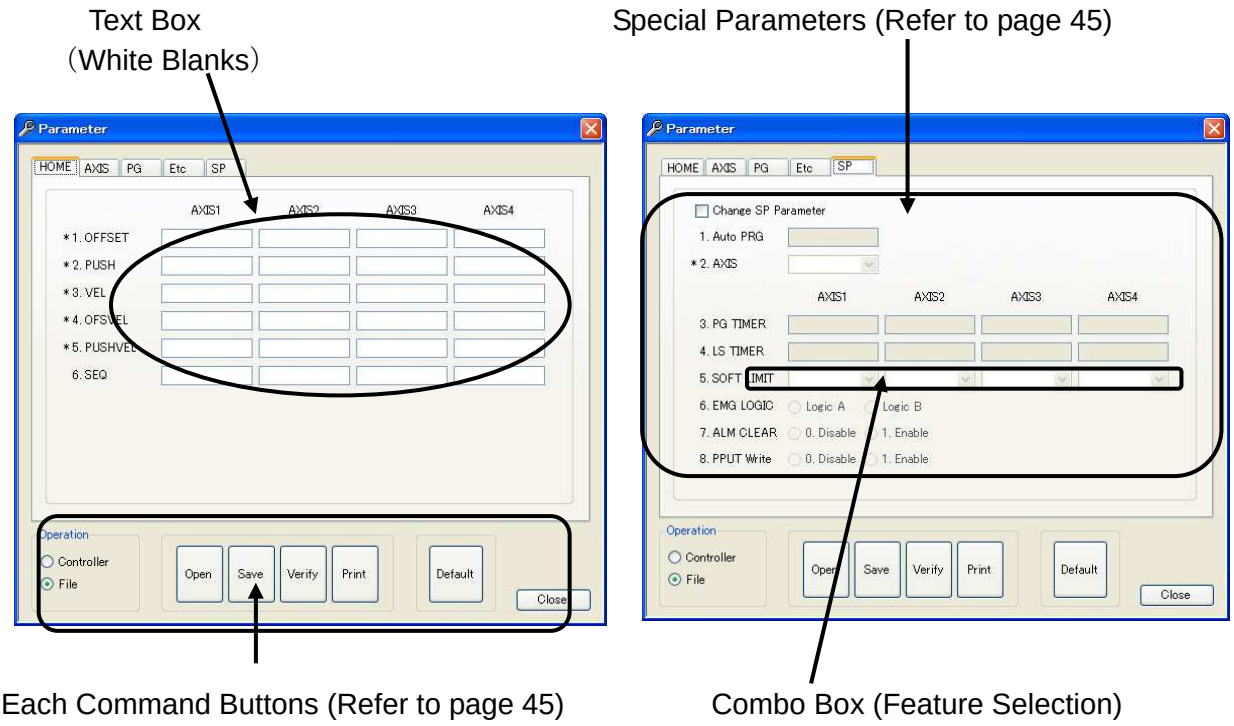
① Go to **[Settings] – [Offline Device Change]** on the menu bar.
② Select axis configuration and stroke/ velocity type for each axis.
③ Click OK

Parameters

Parameter editing in a parameter screen is for detail settings.
In the parameter window, it allows reading parameters in from controllers, writing to controllers, and verifying data by displaying each item for parameters.

※ **Appropriate values are configured for parameters based on devices. It is NOT recommended to change parameters. If the parameters have been changed, the devices may not perform correctly.**
It is recommended to use [Online Device Modification] for device modifications and associated parameter modifications.

Go to **[View] – [Parameters]**. A parameter window will be displayed.
Refer to ***XA-A Series Controller*** User's Manual for each parameter details.



Edit Parameter

Input parameters in text boxes from keyboard.
If a combo box is available, click on the dropdown button. Select an item from the list.

<Note>

If "*" is located at the beginning of the item names, it means that they are items which are automatically updated when Online Device Modification has performed. When Online Device Modification was performed after detailed modifications for items with "*" were done, verify the configured values in the parameter screen again.

Definitions of Commands

◆ **Controller**

[Read] Button
Parameters will be read from controllers and displayed.

[Write] Button
Parameters in the screen will be written to controllers.
No motion can be performed by external input signals during writing.

[Verify] Button
Displayed parameters will be verified with ones in controllers. The results will be displayed.

[Print] Button
Parameters saved in a file will be printed.

◆ **File**

[Open] Button
Parameters saved in a file will be loaded and displayed in a screen.

[Save] Button
Parameters displayed in a screen will be saved as.

[Verify] Button
Parameters displayed in a screen will be verified with parameters in a file. The results will be displayed.

[Print] Button
Parameters displayed in a screen will be printed.

◆ **Common**

[Default] Button
It allows resetting parameters to factory settings. Select a device and click OK.
The factory settings will be set. Write them to controllers.

Special Parameters

Special parameters are not required to modify values in general. It is NOT recommended to make any modifications. If the modifications are required, check on “Modify special parameters” checkbox and modify the values.

<Note>

In a situation where not all axes are connected, if configured values including for disconnected axes were written to configured axes, axes connection error will occur when the power turned on next time and from there on. In such a case, the axes are to be connected or the parameters in the controllers are to be reset.
If the axes connection error occurs after turning the power on several times, please contactus.

Contact regarding *XA-PA4*

For contact regarding questions or concerns on ***XA-PA4***, email us at the following address:

sus-sales@sus.co.jp